American Insurance Association

Law Department

STATEMENT OF THE
AMERICAN INSURANCE ASSOCIATION

On the
Lack of Correlation Between Income and Credit Score
Whether Tested Against the Average or Median Score

March 1999

In December 1998, the Market Conduct and Consumer Affairs Subcommittee of the National Association of Insurance Commissioners (NAIC) conducted a public hearing on Urban Insurance Marketplaces. The Subcommittee focused on credit scoring in the business of insurance and its impact on insurance availability, affordability, accessibility and other conditions affecting consumers in urban insurance markets.

Insurers' freedom to use credit scoring as a tool to underwrite and price premium for new applicants for insurance or to evaluate insurance renewals has been hampered by unfounded fears that credit scoring operates unfairly. For example, it has been speculated that credit scoring might discriminate against populations distinguishable by income. The concern is that lower income populations fare poorly when credit scoring is used to evaluate their insurance risk characteristics.

The American Insurance Association (AIA) testified at the NAIC hearing with the benefit of member company analysis of this issue. The precise objective of the AIA company analysis was to determine the extent to which credit score is correlated with income. AIA presented important, new evidence that credit scores do *not* unfairly discriminate against or even negatively impact lower income groups. Indeed, research revealed that the lowest income groups have the highest average credit score.

Commissioner Steven Larsen (MD) questioned AIA Assistant General Counsel Michael Lovendusky whether the presentation of the data by "average score" might be enhanced by a presentation of the data by "median score by income group". AIA returned to its member company investing resources to test the utility of credit scoring for consideration of this inquiry. AIA is pleased to share with the National Association of Insurance Commissioners additional information on the data used to test the fairness of using credit scoring on a variety of individuals from all income levels; the nature of the statistical analysis; and the analytical results. The analysis concluded that *credit score is not significantly correlated with income* for the AIA company's policyholders.

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The Data Underlying The Study

Since 1995, the AIA company has used a credit scoring model in conjunction with other underwriting criteria. This credit scoring model was developed by Fair, Isaac and Company, Inc. It uses an individual's detailed credit history to predict his or her relative loss performance.

The credit scoring model uses characteristics from the credit history such as public notices (e.g. bankruptcies, tax liens), credit account trade line (e.g. date opened, delinquency, payment due, balance) and additional credit inquiries. It makes no use or reference to personal characteristics such as income, net worth, ethnicity and location. The model was developed with data from over a dozen insurers using over 1.4 million policies representing over $1.5 billion in earned premium and nearly $900 million in incurred losses. Each acceptable characteristic was evaluated as to its correlation to loss ratio and the most predictive characteristics were weighted so that the sum of the weighted characteristics is a score predicting expected loss ratio performance. The model calculates a score that ranges from 200 to 997 with 200 representing risks with the worst expected loss performance and 997 representing risks with the best expected loss performance.

The analysis was based on the Equifax PLS Credit scores for Homeowners and Personal Auto policyholders in force from 1995 through 1997. Thus it includes a broad spectrum of policyholders of varying ages, geographical areas, rating classes and incomes. Estimated income information was obtained from Axciom's Consumer Infobase™ product in terms of nine ranges: Under $15,000, $15-19,000, $20-29,000, $30-39,000, $40-49,000, $50-74,000, $75-99,000, $100-124,000 and $125,000 or more. Both credit score and estimated income information was available for approximately 470,470 policies.

The Analysis of Income With Credit Score

A linear regression of credit score versus income computed the associated statistical parameters that measure correlation. The coefficient of correlation (R), which measures the linkage or connection between credit score and income, was calculated. A coefficient of correlation of 0% represents no correlation or linkage; a coefficient of 100% represents full correlation or linkage. The coefficient of correlation between credit score and income for the policyholders was only 2.5%, demonstrating the absence of any significant correlation.

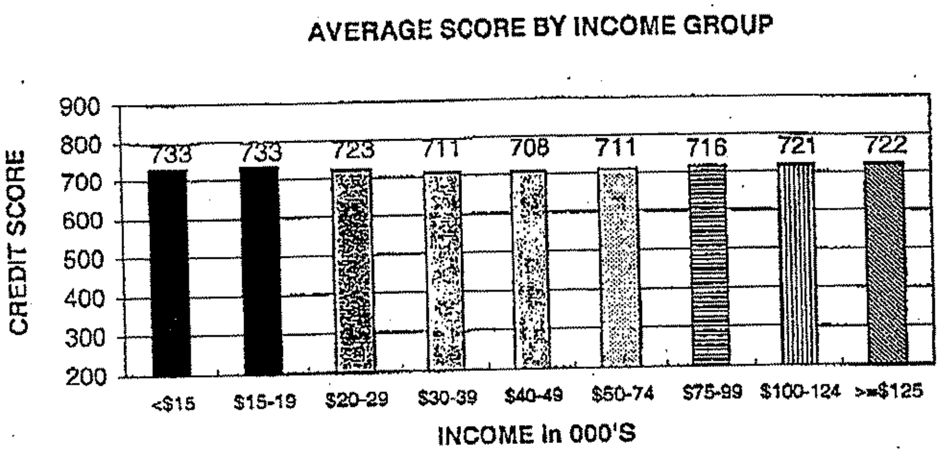
The following table displays the income distribution for the 470,470 policyholders.

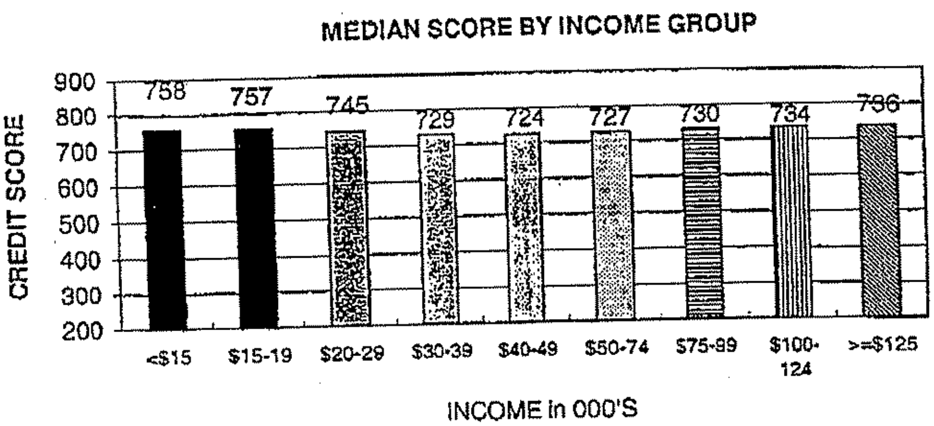
INCOME DISTRIBUTION

INCOME RANGE	FREQUENCY	PERCENT	CUMULATIVE PERCENT
< $15,000	27,939	5.9%	5.9%
$15,000-$19,999	23,554	5.0%	10.9%
$20,000-$29,999	50,830	10.8%	21.7%
$30,000-$39,999	56,688	12.0%	33.8%
$40,000-$49,999	55,723	11.8%	45.6%
$50,000-$74,999	109,201	23.2%	68.9%
$75,000-$99,999	66,945	14.2%	83.1%
$100,000-124,999	41,300	8.8%	91.9%
$125,000 or more	38,290	8.1%	100.0%

The Results of the Analysis of Income With Credit Score

The analysis concluded that *credit score is not significantly correlated with income* for the AIA company's policyholders. This conclusion is based on the standard statistical tests of correlation. To the extent that there is a correlation, lower incomes are associated with higher credit scores. Based on the information available for company policyholders, there is no evidence that credit scores unfairly discriminate against lower income groups. The analytical results are displayed graphically below.





The above two charts display the average and median credit scores for each of the nine income ranges. These charts clearly show that neither the average credit score nor the median credit score vary significantly across the income groups for the AIA company's policyholders. In addition, the variation in score is not monotonic. In other words, as income increases, score does not always increase or always decrease. Income does not have

a clear impact on credit score. In fact, the lowest income groups have the highest average and median credit score.

How This Information Is Improved Over That Published in 1998

The information used for the current analysis was improved in several significant ways from that used for the 1998 AIA testimony. The updated information reflects the following:

- The score information was refreshed to obtain a better percentage of matching records. This had a minor impact on the average score versus the income chart. The chart shows the same pattern as the 1998 chart.
- The median score versus income chart is entirely new. It addresses concerns that use of average score may be misleading. Average score is not misleading; the median score chart displays the exact same pattern as the average score chart.
- The income distribution table was modified to include only those policyholders for whom the company had both credit score and income information. The 1998 information included all policyholders for which the company had income information even if it did not have credit score. The change has virtually no impact on the distribution but makes the data underlying the table completely consistent with the data underlying the charts. The company changed the number of policies cited to 470,470, which represents the policies for which it had both score and income. The 1998 information referenced 700,000 policyholders for which the company had income data.
- The coefficient cited in the statistical test section for the updated scores was updated. It changed from 4.2% to 2.5%. Both numbers indicate no significant correlation. This paper is rhetorically improved to clarify that it cites the coefficient of correlation; the 1998 testimony mistakenly referred to "the coefficient of determination."
- The AIA company policyholder information is not derived from all of its policyholders but from those underwritten from its independent agency distribution system.

Implications for Public Policy

Credit history is a source of affordable, objective information that is useful to insurers, readily available in the market, and beneficial to consumers. Insurers are expressly authorized to use credit history pursuant to the federal Fair Credit Reporting Act. This federal law also expressly bars inconsistent state regulation. The use of credit scoring for underwriting and pricing of personal lines insurance is relatively new. There is no evidence of market misconduct on the part of insurers using credit scoring. Such misconduct would be discoverable and punishable under existing state unfair trade practices laws. For these reasons, insurance use of credit history should not be hampered with new or special state regulation, since the mere proliferation of inconsistent state regulatory treatments will add costs and uncertainties to the use of credit history that undermine its cost-effectiveness for insurers and consumers alike.

AIA represents 387 property and casualty insurers doing business throughout the United States. AIA members wrote $66.8 billion in direct premium -- more than 24% of the market -- in the United States in 1997, the most recent year for which data is available. In particular, AIA members wrote $18.4 billion (30%) in homeowners' and $11.3 billion (10%) in private passenger automobile premiums. The AIA participates extensively in NAIC discussions on the use of credit history for insurance, and cooperated with regulators notably in the formulation of the NAIC white paper on *Credit Reports and Insurance Underwriting* (1997). For more information about insurance industry interest in use of credit history, please contact

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